

WHAT IS CLAIMED IS:

1 1. For use in a broadcast facility, an apparatus for
2 inserting new data packets into an incoming digital video transport
3 stream containing a plurality of original data packets, said
4 apparatus comprising:

5 an input buffer capable of storing said original data
6 packets of said incoming digital video transport stream; and

7 a video processor capable of retrieving said stored
8 original data packets from said input buffer and determining from
9 said original data packets N data frequencies associated with N
10 most recently received ones of said plurality of original data
11 packets, wherein said video processor estimates from said N data
12 frequencies an estimated data frequency of a plurality of next
13 incoming original data packets and uses said estimated data
14 frequency to determine an insertion rate at which said new data
15 packets may be inserted into said plurality of next incoming
16 original data packets.

1 2. The apparatus as set forth in Claim 1 wherein said video
2 processor is further capable of identifying in said stored original
3 data packets replaceable data packets not associated with at least
4 one elementary data stream comprising a program carried in said
5 incoming digital video transport stream.

1 3. The apparatus as set forth in Claim 2 wherein said video
2 processor inserts said new data packets into said plurality of next
3 incoming original data packets by replacing at least one
4 replaceable data packet in said plurality of next incoming original
5 data packets.

1 4. The apparatus as set forth in Claim 1 wherein said video
2 processor is further capable of identifying in said original data
3 packets null data packets.

1 5. The apparatus as set forth in Claim 4 wherein said video
2 processor inserts said new data packets into said plurality of next
3 incoming original data packets by replacing at least one null data
4 packet in said plurality of next incoming original data packets.

1 6. The apparatus as set forth in Claim 1 wherein said video
2 processor estimates said insertion rate as a function of a
3 summation of the M most recently received original data packets.

1 7. The apparatus as set forth in Claim 6 wherein each of
2 said M most recently received original data packets in said
3 summation is scaled by a weighting factor, $a(k)$.

1 8. A method for inserting new data packets into an incoming
2 digital video transport stream containing a plurality of original
3 data packets, the method comprising the steps of:

4 storing the original data packets of the incoming digital
5 video stream;

6 retrieving the stored original data packets from the
7 input buffer;

8 determining from the original data packets N data
9 frequencies associated with N most recently received ones of the
10 plurality of original data packets;

11 estimating from the N data frequencies an estimated data
12 frequency of a plurality of next incoming original data packets;
13 and

14 using the estimated data frequency to determine an
15 insertion rate at which the new data packets may be inserted into
16 the plurality of next incoming original data packets.

1 9. The method as set forth in Claim 8 further comprising the
2 step of identifying in the stored original data packets replaceable
3 data packets not associated with at least one elementary data
4 stream comprising a program carried in the incoming digital video
5 transport stream.

1 10. The method as set forth in Claim 9 further comprising the
2 step of inserting the new data packets into the plurality of next
3 incoming original data packets by replacing at least one
4 replaceable data packet in the plurality of next incoming original
5 data packets.

1 11. The method as set forth in Claim 8 further comprising the
2 step of identifying in the original data packets null data packets.

1 12. The method as set forth in Claim 11 further comprising
2 the step of inserting the new data packets into the plurality of
3 next incoming original data packets by replacing at least one null
4 data packet in the plurality of next incoming original data
5 packets.

1 13. The method as set forth in Claim 8 wherein the step of
2 using the estimated data frequency to determine the insertion rate
3 comprises the sub-step of estimating the insertion rate as a
4 function of a summation of the M most recently received original
5 data packets.

1 14. The method as set forth in Claim 13 further comprising
the sub-step of scaling each of the M most recently received
original data packets in the summation by a weighting factor, $a(k)$.

1 15. A television broadcasting system comprising:

2 a plurality of network video sources, each of said
3 plurality of network video sources capable of transmitting at least
4 one digital video transport stream to another facility in said
5 television broadcast system; and

6 a plurality of broadcast facilities, each of said
7 plurality of broadcast facilities comprising an apparatus for
8 inserting new data packets into a received one of said at least one
9 digital video transport stream containing a plurality of original
10 data packets, said apparatus comprising:

11 an input buffer capable of storing said original
12 data packets of said received digital video transport stream;
13 and

14 a video processor capable of retrieving said stored
15 original data packets from said input buffer and determining
16 from said original data packets N data frequencies associated
17 with N most recently received ones of said plurality of
18 original data packets, wherein said video processor estimates
19 from said N data frequencies an estimated data frequency of a
20 plurality of next incoming original data packets and uses said
21 estimated data frequency to determine an insertion rate at
22 which said new data packets may be inserted into said

23 : plurality of next incoming original data packets.

1 16. The television broadcasting system as set forth in
 2 Claim 15 wherein said video processor is further capable of
 3 identifying in said stored original data packets replaceable data
 4 packets not associated with at least one elementary data stream
 5 comprising a program carried in said received digital video
 6 transport stream.

7 17. The television broadcasting system as set forth in
 8 Claim 16 wherein said video processor inserts said new data packets
 9 into said plurality of next incoming original data packets by
 10 replacing at least one replaceable data packet in said plurality of
 11 next incoming original data packets.

1 18. The television broadcasting system as set forth in
 2 Claim 15 wherein said video processor is further capable of
 3 identifying in said original data packets null data packets.

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1 19. The television broadcasting system as set forth in
2 Claim 18 wherein said video processor inserts said new data packets
3 into said plurality of next incoming original data packets by
4 replacing at least one null data packet in said plurality of next
5 incoming original data packets.

1 20. The television broadcasting system as set forth in
Claim 15 wherein said video processor estimates said insertion rate
as a function of a summation of the M most recently received
original data packets.

1 21. The television broadcasting system as set forth in
Claim 20 wherein each of said M most recently received original
data packets in said summation is scaled by a weighting factor,
a(k).